INFORMATION ALLEY

Support News

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"Get Off the Highway and Into the Alley ™"

In This Issue...

Inside Information...

About the Information Alley

The Information Alley ™ is a publication of Apple Computer, Inc., Support Information Services. It is available to all Apple customers and computer users through a variety of on-line services and direct email capability. The goal of the Information Alley is to help Apple computer users get full use of their Apple computers, peripherals, and software.

Articles chosen for the Information Alley come from many sources, both from inside Apple Computer and from our customers and users. Sources include the Technical Information Library, Apple Assistance Center, New Technology Group, World Wide Product Technical Support, Apple Users Groups, and other technical groups and organizations.

Submissions and Letters to the Information Alley

We welcome articles that help Apple computer users become more knowledgeable about the functionality of their systems, explain or illustrate complex features or functions, or that describe technical tips or techniques. Send submissions to:

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We also welcome letters to the editor and suggestions for future articles. Please send all letters to the preceding address.

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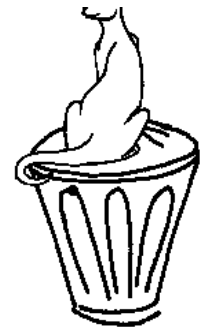
I Caught My First Virus!

By Janet Christian

As I was performing the final once-over of Issue 5, my system began to crash with System errors. At first, I assumed it was something I had done. I use a lot of complex programs in a sort of "hot potato" juggling act (first some text in FrameMaker, then a search of the clip art diskettes using Aldus SuperPaint, then a quick "clean up" of the clip art using Adobe Photoshop, then back to FrameMaker... you get the idea).

When I realized it wasn't "operator error", I next suspected my beta copy of Common Ground, since it is the application I was using when the problems began. They were very helpful when I called, and offered to send me a new copy via AppleLink. When I tried to run AppleLink, it displayed a message that it was corrupted by a virus and warned me to quit, which I promptly did.

Disinfectant discovered 9 files — all applications — infected with the **nVir B** virus! I disinfected the files and did a clean install (one of the corrupt files was my System file). Fortunately, I was able to tell the source of the virus because only one of the infected files was new (as of the day before). All of this explains why the last issue of the Information Alley went out one day late.

I might not have caught the virus earlier if it hadn't been for AppleLink, which includes a built-in virus detector. Our online team would have caught it in the Information Alley (attached to the Common Ground MiniViewer application) because they scan everything before they upload it. But my own system and files may have been seriously damaged.

In honor of my experience, this issue includes a wonderful article on viruses, as well as a description of system errors. I was lucky to be surrounded by the best technical support experts around to answer my myriad questions. Hopefully, these articles will give you the knowledge you need to catch viruses early and to understand your system when it is trying to tell you something (via an error or odd behavior).

How is Our Frequency and Size?

Now that we have a few issues "under our belts" we want to know how you like the magazine's frequency and size.

We've modified the Tell Us What You Think page to accommodate two new questions: "How is the frequency of the magazine?" and "How is the length of the magazine?". (They are identified with a small pointing hand – ☞.)

Please take a moment and send us a completed feedback form. If you've sent one in the past, please drop us a quick email answering these two questions. Keep in mind that the frequency could affect the length, and vice-versa. Would you rather have it less often but longer, more often but shorter, like it is now, or some other combination?

Your feedback is valuable to us and can help us decide the direction the Information Alley should go.

Minor Correction

Last issue's SCSI Connection article indicated that SCSI ID 3 is for **external** CD-ROM drives. ID 3 is actually reserved for **internal** CD-ROM drives.

System Error Codes Explained

From the Technical Information Library

This article explains what some Macintosh system errors actually mean. You can use them to interpret what is happening when your Macintosh gives these errors.

Because the Macintosh is a complex operating system, the problems a user encounters can be equally complex.
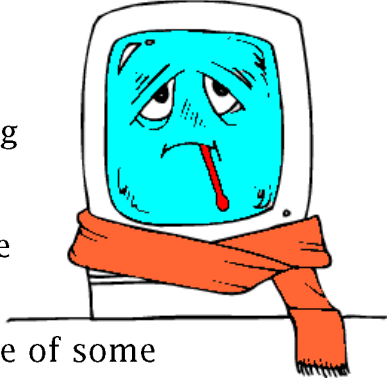
These are example of some problems that may occur:

- A handle can be de-referenced.

- A routine can get a NIL pointer.

- The stack can dip into the heap for just a few cycles and not be caught by the stack sniffer.

- An application can forget to check an error code.

A Macintosh usually crashes with a system error code while running under System 6.0.x. System 7 changed the way errors are displayed – instead of displaying an error code, it translates the code to the appropriate words, like "Address Error".

Finding out what's wrong involves use of debugging tools, intricate knowledge of Macintosh memory structures, and familiarity with the application itself. Fixing it usually involves recompiling the source code. The table below explains some of the codes.

ID	DESCRIPTION
ID=01	**Bus error.** This means the computer tried to access memory that doesn't exist. You can get this error on almost any Macintosh. If one of these computers tried to access one or more bytes beyond the total number of bytes in RAM, you see a bus error. You should never see this error on a Macintosh Plus or SE, because address references that are out of bounds "roll over". This means if one of these computers tries to access one byte beyond the total bytes in RAM, it actually accesses the first byte in memory. If you see this error on a Macintosh Plus or SE, it's reporting the wrong error or having hardware problems.
ID=02	**Address error.** The Motorola 68000 microprocessor can access memory in increments of one byte (8 bits), one word (16 bits), or one long word (32 bits). The microprocessor can access a byte of information at an odd or even memory address. But it must access a word or long word at an even memory address. So, when the microprocessor attempts to read or write a word or long word at an odd address, you see this error. Since that's a 50/50 proposition when running random code, this one shows up quite often.
ID=03	**Illegal Instruction.** The computer has a specific vocabulary of machine language instructions it can understand. If a computer tries to execute an instruction that isn't in its vocabulary, you see this error code. It's less likely than error 02, but still very common.
ID=04	**Zero Divide error.** This error results if the microprocessor divides two numbers, and the divisor is zero. Sometimes a programmer puts these in as debugging aids, and then forgets to take them out.

ID	DESCRIPTION
ID=05	**Range Check error.** Programmers can use an instruction in the Motorola 68000 to check if a number is within a certain range. This error indicates that the number tested isn't in the specified range.
ID=06	**Overflow error.** Each number stored in a computer is given a certain amount of space. The larger the number, the more space is needed to represent the number. An overflow condition results if a generated number is too big for its allotted space. A Motorola 68000 instruction tests for an overflow condition, and displays this error if it detects an overflow.
ID=07	**Privilege Violation.** The Motorola 68000 runs in Supervisor or User mode. The Macintosh should always be in Supervisor mode, but sometimes is placed in User mode. Some of the instructions can only be executed in Supervisor mode. If the computer attempts one of these instructions while in User mode, a Privilege Violation error results.
ID=08	**Trace Mode error.** A programmer can use a runtime debugger while in Trace mode. This allows tracing through a program one instruction at a time. You see this error if a debugger isn't installed and the 68000 is accidentally placed in Trace mode.
ID=09 and ID=10	**Line 1010 & 1111 trap.** There are many routines in the Macintosh ROM that can be called by placing instructions in a program that aren't in the 68000's vocabulary. When the 68000 encounters such an instruction, it looks it up in the instruction table. This table gives the location of routines paired with each instruction. If it finds an entry in the table for the instruction, it branches to the routine. If there's no entry for the instruction, you see one of these errors.
ID=12	**Unimplemented Core Routine.** A programmer might set breakpoints in parts of a program to inspect for errors. This requires using a debugger. If a debugger isn't installed when a breakpoint occurs, you see this error code.
ID=13	**Uninstalled Interrupt.** The Macintosh uses an interrupt to identify when devices like keyboards and disk drives need service. Routines must be available in memory to tell the computer how to service the device. If those routines aren't available, you see this error.
ID=15	**Segment Loader error.** Macintosh programs are broken up into segments, and each program will always have at least one segment. Multiple segments allow loading parts of the program into memory to provide more room for data in internal RAM. The segment loader is responsible for loading a needed segment into RAM. If the segment loader can't do this, you'll see this error.
ID=17 through ID=24	**Packages 0-7 aren't present.** The Macintosh uses packages to do specific tasks. Some of the packages are International Utilities, Binary-Decimal Conversion, Standard File Utilities, and Disk Initialization. These packages are located in the System file. If you get these errors, you probably have a damaged System file. Error codes 15, 16, 26, 27, 30, and 31 also come up when the System file is damaged. Try replacing the System file.
ID=25	**Memory Full error.** You've probably run out of RAM. But you can get this error when an earlier error causes the Macintosh to falsely detect an out-of-memory condition.
ID=26	**Bad Program Launch.** The Macintosh couldn't execute the application opened.
ID=28	**Stack Ran into Heap.** This is similar to the Memory Full error. It's a good idea to save your work frequently, and keep current backups of your hard disk data. When a system crash does occur, you'll lose less data if you've taken these precautions.

If you're frequently getting system errors, investigate these possibilities:

- Try to open the document with a current version copy of the application.
- Try opening other documents with the same copy of the application.
- Check to see if the document size exceeds the application size limits.
- Boot your system with extensions off (restart while holding the **Shift** key down).
- Any changes (new Control Panels, extensions, etc.) you've made to the system might give you a clue to the cause of the crashes.
- Make a note of the desk accessories you had open at the time of the crash and exactly what you did before the crash.
- Also make a note of the error ID or text, and the version numbers of the application and system software you were using.
- Try to recreate the problem on another Macintosh.
- Cleanly install your system software and try the application again.

Making an Emergency Boot Disk

By Murray Wheeler

This article explains how to create a System 7.x boot disk (for emergencies) that you can run with an application. There is not enough room for the System, Finder, and the application on the floppy.

Norton Utilities and other third party vendors have emergency disks. Computers designed after October 1992 require system enablers; it is possible that the Norton emergency disk won't work. Follow these instructions to create a 7.x boot disk that works on any Macintosh model running System 7.x:

STEP	ACTION
1	Run the System software installer for the type of Macintosh you have. It doesn't matter if your system came with system software on floppy (Install Me First disk) or on a CD-ROM. If you are installing from a floppy, there is some disk swapping.
2	Install a "Minimum" System (for your specific Macintosh) on a 1.44 MB floppy. You can find this in the "Custom" options. This gives you the smallest possible System file, which should be under 750K for System 7.1
3	Move the System file and enabler (if your Macintosh needs one) out of the System Folder to the root level of the disk (the same level as the System Folder itself). Throw the rest of the System Folder in the trash AND empty the trash.
4	Copy your application to the disk and change the application's name to Finder. There should be three things on the disk: System, Enabler (if needed), and Finder (which is really your application). **NOTE:** It is important that these items are at the root level of the disk and not within a System Folder or other folder, or on the desktop.
5	Restart your Macintosh with the startup disk you just created. Your Macintosh should start up into the application you placed on the floppy.

From the Technical Information Library

What is a Virus?

A virus is a program with two distinct functions:

- It spreads itself from machine to machine (self-reproducing code). This includes the actual infection of other systems as well as the stashing away of code into as many "carriers" as possible.

- It implements the "symptoms" planned by the perpetrator of the virus. This could be any number of things, up to and including erasing a disk on a specific date.

A Bit of History

Computer viruses have been around for almost as long as computers. John Van Neumann, the father of the modern computer, toyed with the idea of self-reproducing computer code as early as 1948. In the late 1970s, there was even a training ground for the writing of viruses. It was a program called Core Wars that implemented an artificial environment pitting two virus programs against each other.

Viruses are Not Unique to the Macintosh

The Macintosh is not the only system to be plagued by viruses. Mainframe and minicomputers are also targets for virus programmers. One of the more recent mainframe incidents was the virus that invaded IBM's mail system and brought it to its knees for a couple of days. IBM PC users have been experiencing viruses for several years now. The most common method of attack is through the COMMAND.COM file. The Macintosh community has been lucky to have gone so long without virus programming becoming the thing to do.

Not All Viruses are Meant to be Damaging, But...

Viruses are not all meant to be damaging. The programmer may just want to prove he or she can do it and have the satisfaction of reading about it in magazines and on the BBS network. Sometimes, these viruses can cause problems anyway.

For example, the virus that has prompted this series of articles was meant to be benign except in specific cases. However, it takes up memory and processing time and has caused random side effects such as printing problems and system crashes.

Don't Panic; Don't Overreact

If you think that you have a virus, it's important to not overreact. It is important to take a step back and evaluate the situation calmly. Once you know that you have a virus and what it has infected, it is a relatively easy thing to combat. This article contains enough information for you to deal with most viruses.

The Great Virus Hunt

When Do You Suspect You Might Have a Virus?

When your computer begins to do things out of the ordinary, or when it

stops being able to do things it has always done in the past. The problem with this is that corrupted system files can lead to similar symptoms even though a virus isn't involved. When problems occur, they are much more likely to be the result of non-virus difficulties. When you have ruled out the standard problem areas, you should look into the possibility that your system has been infected by a virus.

What to Look For If You Think You Have a Virus

Look for invisible files in your System folder that don't belong there. Unless you specifically have an application that creates invisible files in the System folder, every invisible file in the System folder should be suspect. Also, a general check of all the files in your System folder for resources that don't belong in those files is well worth the effort.

Files and Resources a Virus Might Infect

- Any and all applications
- HyperCard Stacks (the MacMag virus was spread via a HyperCard stack)
- Files in the System folder, including:
  - System
  - Finder
  - Note Pad file
  - Scrapbook file
  - Clipboard file
  - Easy Access
  - Sound
  - Mouse
  - Startup Device
  - Monitors
  - Color
  - General
  - Keyboard
  - LaserWriter

- ImageWriter
- AppleTalk ImageWriter
- ImageWriter LQ

In other words, all system files.

Files a Virus Might Damage Inadvertently

Any file on an infected volume or system, including system files, documents, applications, etc.

Public Domain Issues

Most viruses spread via public bulletin board systems and are hidden in public domain programs. Sexy Ladies, a program distributed at a MacWorld Expo in San Francisco, erased whatever hard disk or floppy disk it was on when it was launched.

Network Issues

The use of networks can easily enhance the spread of a virus. Different scenarios are possible, with the simplest being a public domain folder on a server that everyone gets the latest neat stuff from. Also, shared applications residing on a server could become infected, which would then infect every machine that those applications were run on.

How Viruses Propagate

Viruses can propagate by a variety of methods. The most common way for a Macintosh virus to replicate itself is to have an INIT (Extension) that installs a background (VBL) task that checks for specific occurrences, such as a disk insertion, and then copies itself somewhere to that disk.

VBL Tasks

The Macintosh has always had a limited form of background processing available to it through the use of the Vertical BLanking (VBL) queue. Every time the screen on a Macintosh (except for a Macintosh II) is refreshed, any routines installed in the queue are

executed. The Macintosh II has a "dummy" VBL queue for compatibility reasons since the advent of a variety of screens has led to different vertical retrace periods.

VBL tasks can be installed in the queue by any program. The program has to load a routine into a section of memory and install the routine into the VBL queue by calling the Vinstall ROM routine. It is the responsibility of the installing program to make sure the segment of memory containing the routine remains available even after the program has exited. Each VBL task has a specified time period it should be left "asleep" before it is called. Every time the routine is executed, a counter is decremented for that routine. When that counter reaches zero, the routine is deleted from the queue unless the routine itself resets the counter.

Lengthy VBL tasks such as the one that might be used to replicate a virus can interfere with the normal operation of the Macintosh by interrupting processes that shouldn't be interrupted. A perfect example of this is printing to a LaserWriter over an AppleTalk network. If a VBL task takes too long in its execution, the printing process could terminate abnormally and leave the machine's connection to the network in an unstable state.

For the purposes of a virus, an INIT (also called an Extension) is most likely to be the culprit responsible for installing a VBL task.

INITs/Extensions

INITs are routines that are run when the Macintosh is booted. For the most part, they have full access to all of the commands normally available to a standard Macintosh program. The major difference is that the low memory global routines have not been set up yet, so any INIT needing access to structures normally stored in low memory must create its own.

INITs in the System File

When a Macintosh boots, the INITs in the System file in the "blessed" folder are the first code to be executed. These INITs should generally be Apple INITs only – any non-Apple INITs should be considered suspect.

The INIT 31 Mechanism

A special INIT in the System file, INIT 31, was created to allow for the execution of non-Apple INITs without having them installed in the System file itself. When all of the other INITs in the System file have been executed, INIT 31 walks through the System folder looking for files of types INIT, Chooser, or Control Panel, and executes any INIT resources it finds in these files.

The files are loaded in alphabetical order. Needless to say, a simple way for hiding parts of a virus is to drop INITs into legitimate files already existing in the System folder with these file types.

Control Panels

Control Panel files (file type **cdev**) indicates a file containing a Control Panel device. When the Control Panel is loaded, it walks through the directory of the System folder looking for any files of type **cdev**. When it finds a file of this type, it loads the Icon number (ICN#) of the file (assuming it has one) into the list of icons shown on the left side of the Control Panel. When you click on the icon of the **cdev** in the Control Panel, the code in the **cdev** resource in the file of type **cdev** is executed. A virus could easily use this mechanism as a way to infect a system, install a VBL task, etc.

Many Control Panel files have INITs in them with the **cdev** controlling the settings that the Extension uses when it is installed. A good example of this is the settings for a screen blanker. The Extension actually installs the VBL task, but the Control Panel controls when dimming occurs. None of the standard Apple system Control Panel files have

Extensions in them, but there is nothing to prevent a virus from installing an Extension in these files as a way of hiding its code.

Drivers

Driver (DRVR) resources typically can have one of two functions. They can be the code for:

- A desk accessory
- Drivers necessary for the system to perform some function such as printing

Once again, the key word here is "code". Whenever code is involved, the potential arises for the perpetrator of a virus to take advantage of it.

Just as with Control Panels, when a driver gets opened, either by the choosing of a desk accessory or by the system, code is executed at that point. This is the stage at which a virus might fulfill its purpose.

CODE Resources

Each application has at least two CODE resources. The first of these CODE resources has an ID of 0 and contains what is known as the jump table.

This table provides the basic information necessary for various parts of a program to call routines in other CODE segments. The current rage in viruses is to modify the CODE ID = 0 resource of an application so that a CODE segment it installs in the application gets called before the application is actually run. This CODE segment could go out and check if the virus has infected the current system, and if it hasn't, install itself.

All the perpetrator of a virus has to do at this point is upload a copy of an infected application to a BBS, and it spreads across the world.

Applications that Allow External Procedures

Viruses could take advantage of the external procedures that are allowed by some applications. The perfect example of this is HyperCard, with its XCMDs and XFCNs. This is how the MacMag virus was transmitted. (Uploaded to CompuServe in 1988, its sole purpose was to display a "universal message of peace" on March 2, 1988.)

Safeguarding Your Systems

What Makes Our System Susceptible to Viruses?

The various mechanisms described earlier in this article make our system easy to infiltrate by a virus. Remember that it is those same mechanisms that add to the flexibility and "look and feel" of the Macintosh. For instance, the Extension mechanism is used by mail systems to load their code in. AppleShare uses the Extension mechanism to mount network volumes at boot time.

Some Suggestions

- Lock your master diskettes

  Always keep original "Master" disks locked. This prevents a virus from spreading to your original disks. Our disk locking mechanism is hardware based – viruses can't infect locked disks!

- Protect your networks

  Network administrators should not let just anyone put software on the server. Applications on a network server should come only from known good masters.

- Be wary of public domain software

  Public domain software should be checked quite thoroughly on a floppy-based system for any infections before being copied to a hard disk based system. This also protect you from any "Trojan Horse" programs such as Sexy Ladies.

- Quarantine infected systems

  If you identify a system as being infected with a virus, immediately isolate (quarantine) it from other systems. This means disconnecting it from any network and not letting anyone take any files from the exposed system to another system. Once the system has been "disinfected", you can let the files be copied or moved.

- Use a virus detector

  Use a virus detector, such as Disinfectant, public domain software from Northwestern University; Vaccine, a public domain Extension written to block viruses, SAM (Symantec Antivirus for Macintosh); or ResEdit, which is a good tool to look for viruses on your disks.

  Next issue: A list and description of all known viruses (from John Norstad of Northwestern University).

Switching from Newton Connection Kit 1.0 to 2.0

From the Technical Information Library

Synchronized files created with Newton Connection Kit 1.0 are incompatible with Newton Connection Kit 2.0 and vice-versa. This means you cannot use 2.0 to synchronize or restore from a 1.0 file. Therefore, BEFORE using Newton Connection Kit 2.0, perform these steps:

STEP	ACTION
1	Launch Newton Connection 1.0.
2	Synchronize. This makes sure your Newton (and PCMCIA card if applicable) contains all the information you may have added to the 1.0 synchronize file since the last synchronization.
3	Quit Newton Connection 1.0 and delete or rename (see **Note**) the 1.0 synchronization file. This ensures that Newton Connection 2.0 does not try to use the 1.0 file when synchronizing.
4	If you have not already done so, install Newton Connection 2.0.
5	Launch Newton Connection 2.0 and synchronize. This creates a new 2.0 synchronization file with the data currently in your Newton.

Note: Once you are comfortable using the new version, we suggest you delete the old Newton Connection Kit 1.0 files.

If you do decide to keep any 1.0 files around, please keep a copy of Newton Connection Kit 1.0 around. If you accidentally, restore a 1.0 file using Newton Connection Kit 2.0, you will see a -48025 error when you try to synchronize.

Perform the following steps to correct this problem:

STEP	ACTION
1	Quit Newton Connection 2.0.
2	Launch Newton Connection 1.0.
3	Using Newton Connection 1.0 restore the 1.0 synchronize file onto Newton.
4	Quit Newton Connection 1.0.
5	Delete the old 2.0 synchronize files.
6	Launch Newton Connection 2.0.
7	Synchronize using Newton Connection 2.0.

That's it! You are now ready to go.

System Enablers: Current Versions and Change History

By Patrick Fox

This article lists the current versions of the Macintosh System Enablers, and what the changes were made to past version. In the past, when Apple has come out with new computers, Apple has also revised the system software so it knows how to start up these new computers.

Revising the whole system software, however, is a very time-consuming process, and Apple has been releasing new computers much more rapidly than it did in the past.

The solution to this dilemma is the System Enabler file. A System Enabler contains everything that is needed to boot (start up) a new computer (or computers). All of the computers that have come out since system software 7.1 (September 1992) require a System Enabler to start up.

Note: The Plus, SE, SE/30, Classic, Classic II, LC, LC II, Mac II, IIx, IIcx, IIsi, IIci, IIfx, PB 100/140/145/170, Quadra 700, 900, and 950 do NOT need a System Enabler.

The Performa 200, 400, 405, 430, and 410 do NOT require a System Enabler.

Where to Find System Enablers

- You can find the Enablers on AppleLink following this path:

  Software Sampler → Apple SW Updates → Macintosh → Supplemental System Software → System Enablers

- You can find the Enablers on the Internet following this procedure:

  Apple recommends using TurboGopher client software to access the Apple Computer Higher Education Gopher server. The "System Enablers" software folder is located in the following path:

  Home Gopher Server → Computer Information → Apple Computer Higher Education gopher server → USA Service, Support & Training → Apple SW Updates → System Enablers

- TurboGopher Client software is available via anonymous File Transfer Protocol (ftp) to:

  boombox.micro.umn.edu in the **/pub/gopher** directory.

- Connecting to the Apple Computer Higher Education Gopher server:

  The host address is: **info.hed.apple.com**

  The IP number is: **34.84.132.13§**

Current Macintosh System Enablers

Macintosh	System Enabler Used	Current Version	Note
Macintosh Centris 610	System Enabler 040	1.1	C
Macintosh Centris 650	System Enabler 040	1.1	C
Macintosh Centris 660AV	System Enabler 088	1.2	C
Macintosh Color Classic	System Enabler 401	1.0.5	C
Macintosh IIvi, IIvx	System Enabler 001	1.0.1	
Macintosh LC III	System Enabler 003	1.1	C
Macintosh LC 475	System Enabler 065	1.2	C
Macintosh LC 520, 550	System Enabler 403	1.0.2	C
Macintosh LC 575	System Enabler 065	1.2	C
Macintosh PowerBook 160, 165c, 180, 180c	System Enabler 131	1.0.3	A, C
Macintosh PowerBook 520, 520c, 540, 540c	PowerBook 500 Series Enabler	1.0.2	
Macintosh PowerBook Duo 210, 230, 250, 270c	PowerBook Duo Enabler	1.0	B
Macintosh PowerBook Duo 280, 280c	PowerBook Duo Enabler	2.0	
Macintosh Quadra 605	System Enabler 065	1.2	C
Macintosh Quadra 610. 650	System Enabler 040	1.1	C
Macintosh Quadra 660AV, 840AV	System Enabler 088	1.2	C
Macintosh Quadra 800	System Enabler 040	1.1	C
Macintosh TV	System Enabler 404	1.0	
Performa 600	System Enabler 304	1.0.1	
Performa 450, 460, 466, 467	System Enabler 308	1.0	
Performa 475, 476, 575, 577, 578	System Enabler 364	1.1	
Performa 550, 560	System Enabler 332	1.1	
Power Macintosh	PowerPC Enabler	1.0.1	C
Power Macintosh Upgrade	PowerPC Upgrade Card Enabler	1.0.1	C

Note: These notes apply to the letters in the Note column of the preceding table:

    A – System Enabler 131 replaces System Enabler 111 and System Enabler 121

    B – Express Modem users should also install the Duo Battery Patch (Extension).

    C – Latest version found on System Update Disk v 3.0

Enabler Change History

PowerBook Duo Enabler

1.0 First release. Replaces System Enabler 201. It fixes the ADB problems for PowerBook Duo machines.

2.0 Replaced PowerBook Duo Enabler 1.0. It fixed a conflict between the PowerBook Duo Enabler 1.0 and the Apple Express Modem software. No longer needs battery patch extension.

System Enabler 001

1.0 First release.

1.0.1 Improved support for high speed serial communications and improved accuracy of the system clock. Also addressed a rare problem where floppies may not be ejected properly at shutdown.

System Enabler 003

1.0 First release.

System Enabler 040

1.0 First release.

1.1 Added support for Quadra 610 and Quadra 650.

System Enabler 065

1.0 First release for Macintosh LC 475 and Macintosh Quadra 605.

1.1 Added support for Macintosh LC 575.

System Enabler 088

1.0 First release.

1.0.1 Required for System 7 Pro 7.1.1 support.

1.1 Added support for Quadra 660AV.

1.2 Added support for Quadra 660AV. Increased File Manager performance and Resource Manager performance Corrects failure to print to the LW Select 310 printer. Improves network reliability.

System Enabler 131

1.0 First release to support the PowerBook 180c. Replaced System Enabler 121 (supporting 165c) as well as System Enabler 111 (supporting 160 and 180).

1.0.2 Corrected a problem involving the serial driver. If a user has the serial driver open, but is not transmitting, and then puts the PowerBook to sleep, any attempt to transmit upon waking, would cause the system to hang.

1.0.3 Added support for the PowerBook 165.

System Enabler 401

1.0.4 First release.

1.0.5 Fixed a problem involving erratic mouse movement with Apple II mouse based applications running on the Apple IIe card installed in the PDS slot.
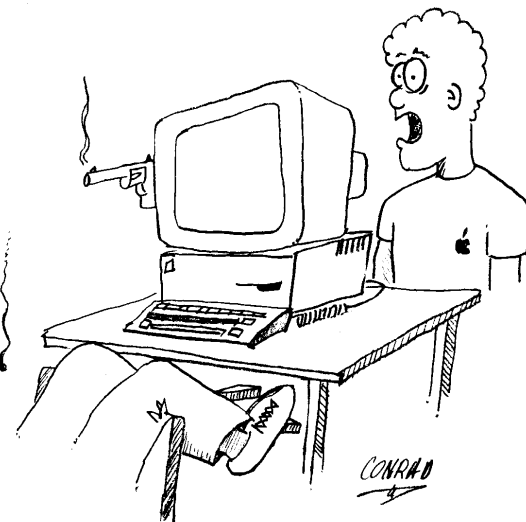
System Enabler 403

1.0 First release.

1.0.1 Manufacturing release only.

System Enabler 404

1.0 First release.

Alternate Route • Darren Conrad

"Boy, these computer games are getting to be realistic!"

The Apple Open Collaboration Environment (AOCE)

By Fred Widmer

The Apple Open Collaboration Environment (AOCE) includes two products:

- PowerTalk
- PowerShare

PowerTalk

System 7 Pro with PowerTalk is an upgrade to System 7 that provides a unified framework for collaboration on the Macintosh computer.

The PowerTalk package includes System 7 extensions for collaborative services, and AppleMail, a letter application for sending and receiving messages. AppleMail is included to enable PowerTalk users to immediately take advantage of the collaborative features of System 7 with PowerTalk. PowerTalk requires a hard drive. Apple recommends 5 MB of RAM for PowerTalk users.

PowerShare

PowerShare is the AOCE server product.

The PowerShare package provides server-based services. Only customers who require a server-based environment need to purchase the PowerShare package. Basic collaboration services are available in the PowerTalk package.
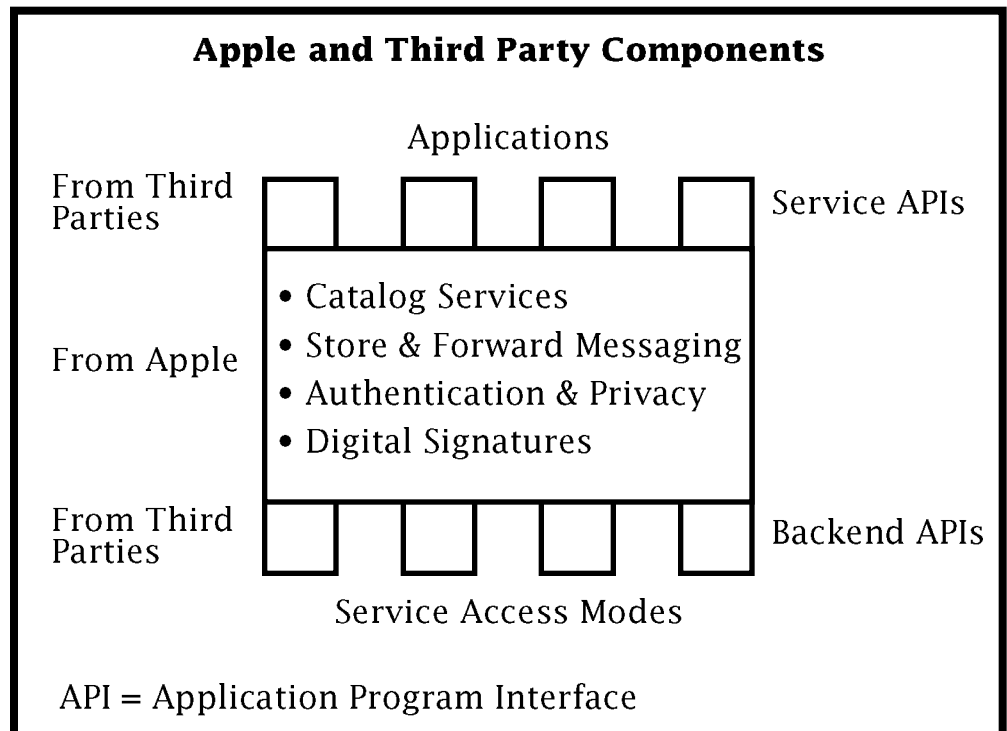
Technology Overview

PowerTalk and PowerShare are the first Apple products to take advantage of the AOCE technology. PowerShare and System 7 with PowerTalk consist of a number of managers, toolbox packages, and new desktop facilities that provide catalog services, store and forward messaging and mail, authentication and privacy features, and digital signature capability.

Apple and Third Party Components

The diagram at the bottom of this page illustrates what comes from Apple and what comes from third parties. These components are described here:

- Catalog Services

  PowerTalk catalog services can provide access to simple lists, which is only one of many types of

Apple and Third Party Components

Applications

| From Third Parties | | Service APIs |

• Catalog Services
• Store & Forward Messaging
• Authentication & Privacy
• Digital Signatures

From Apple

| From Third Parties | | Backend APIs |

Service Access Modes

API = Application Program Interface

information available through the PowerTalk catalogs. PowerTalk catalog services also provide access to data in any format from sounds to pictures to QuickTime movies. PowerTalk catalogs can provide access to services located on another Macintosh computer, an external directory service such as X.500, or a foreign file system such as a CD-ROM based database.

- Store and Forward Messaging

Store and forward messaging is the ability to send messages to a server for later distribution or to hold the message locally until the destination is available to accept the incoming message. AOCE messages can take the form of either letters exchanged between users or program to program communication.

- Authentication and Privacy

Authentication services ensure that the communicating entities are who they claim to be. Privacy refers to a new protocol, AppleTalk Secure Data Stream Protocol (ASDSP) which prevents wire tapping.
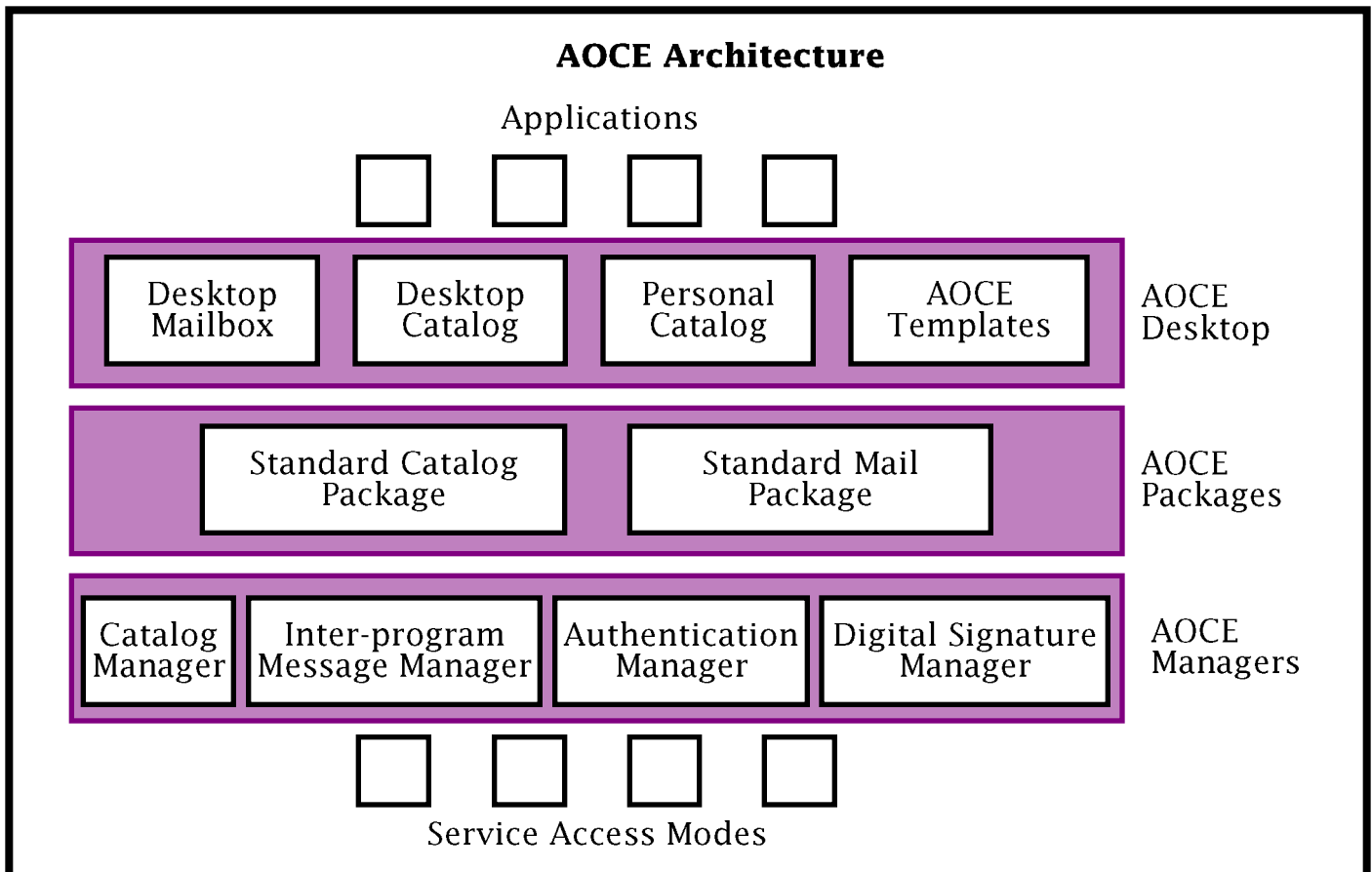
- Digital Signatures

Digital signatures provide a means of detecting whether data has been altered and of providing positive identification of the signer. They are especially useful in building automated workflow solutions.

AOCE Architecture

AOCE technology is built in several layers. The diagram at the bottom on this page illustrates this architecture.

Inside the AOCE Toolbox are the managers and packages of the underlying technology. AOCE software

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AOCE Architecture

Applications

| Desktop Mailbox | Desktop Catalog | Personal Catalog | AOCE Templates | AOCE Desktop |

| Standard Catalog Package | Standard Mail Package | AOCE Packages |

| Catalog Manager | Inter-program Message Manager | Authentication Manager | Digital Signature Manager | AOCE Managers |

Service Access Modes

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includes front end Application Program Interfaces (APIs) for developers to build collaborative features into existing end user applications or to build entirely new collaborative applications. AOCE technology also offers an open back end through Service Access Modules. Developers can use these APIs to connect AOCE users to existing messaging and catalog services or to new, as yet unknown, services.

The front end APIs provide a uniform way of accessing collaborative service from within third party applications. Building the services into the operating system preserves the Macintosh experience. End users access collaborative services in the same manner, no matter which vendor's application is being used.

The open backend APIs of AOCE technology extend the reach of PowerTalk and PowerShare users to any messaging or catalog service. Service Access Modules (SAMs) make the technology fully extensible. When a new messaging or catalog standard appears, PowerTalk users can easily plug into the system through the use of a SAM.

AOCE Questions and Answers

Q: After I installed System 7 Pro, my Macintosh at startup is slower than before. Does it take so long because of the network activity of PowerTalk?

A: No, this normal behavior because of the additional setup required with PowerTalk. It isn't really network related, it happens even if AppleTalk is turned off.

Q: I have forgotten the Access Code to my Key Chain; how do I create a new one?

A: If you have forgotten the Access Code to your Key Chain, or it has become corrupted, throw away the PowerTalk Setup preferences file from the Preferences Folder. If there are

items in the mailbox, they show up again the next time the system goes through the startup process, even if the new Key Chain is set to a different name.

Q: What's the difference between a Password and an Access Code?

A: In the documentation there is a distinction between the two. Passwords are used for things like external mail systems, AppleShare file servers, and so on, while Access Code refers only to the PowerTalk Key Chain, which unlocks the other passwords.

Q: Direct AppleTalk doesn't tell you who sent the mail, only the computer's name from the Sharing Setup Control Panel.

A: Here are a two ways to resolve this:

- Place the user's name in the **Machine Name** field of the Sharing Setup Control Panel to help identify mail senders.

- Create a new information card for the person, name it anything you want (for example, name it with their name), then drag their AppleTalk Info Card to the new Info Card you just created. Their AppleTalk address is added to the list of electronic addresses in the Info Card you created with a name that makes sense to you.

- Uncheck Direct AppleTalk Mail in the **I'm At**... dialog box under the Special menu. Mail can then only be sent through connections that are "turned-on". If all mail is sent through a server, then the sender's name is included with the mail. If no server is available, then all access to the user's mailbox is disabled. This is handy if the user doesn't want mail dropped in his or her mailbox without user authentication – there is some room for abuse with non-authenticated mail.

Q: Information Cards and Aliases are easily confused. Information Cards for file servers allow access similar to Aliases. What is the difference?

A: Information Cards are not a hot link to a server but rather a document that contains the address of that server along with other user information. Information Cards only work under System 7 Pro, while Aliases work under all versions of System 7.x.

Q: If I threw away my Key Chain, how can I get it back?

A: Click on the Key Chain button in the PowerTalk Setup control panel, a new Key Chain will be generated.

Q: How do I make new letterheads?

A: Documents saved as letterhead become new, potential letterheads.

Q: The mailbox Icon should change when there's mail or when there's a problem sending mail. Why isn't it?

A: Indication of mail in the mail box is set in the mail box preferences, the mailbox Icon does not change. The preferences box setting either beeps, flashes an alert, flashes an icon in the upper left hand corner, and so on.

Q: What do the different Information Card Icons mean for the same person?

A: Information Cards may provide information on a person, Macintosh, or File Server. A person may own all three types of Information Cards, with three different Information Card Icons representing different connections, all of which get information to the same mail box.

Q: What does it take to send and receive mail without a mail server?

A: You need System 7 Pro; it includes everything you need for server-less mail, no PowerShare is required.

Q: Is it OK to use PowerTalk for 20 or more people without a server?

A: Yes, it's fine to use PowerTalk with 20 or more clients in a server-less environment. However larger sites might want the central administration features.

Q: How do you remove an enclosure from a letter?

A: Here are a few suggestions:

- Simply drag the Icon representing the enclosure to the desktop, and a copy of the enclosed file(s) is made.

- Throw it in the trash, if you want to get rid of it

- Drag it to the destination folder. System 7 Pro adds a new feature that allows dragging between applications. Things can be dragged between Finder windows and the AOCE Mailer window.

Q: Can I change PowerShare service to the Key Chain by doing a shift click and drag of several items?

A: Services added to the Key Chain are added one by one, you cannot shift click and drag.

Q: Does the Views control panel change mail Icons to larger size?

A: Changing the List Views option in the Views control panel allows for larger Icons in your mail box. 🍎

Tips and Tidbits

Hold down the button on the front panel of an Apple fax modem as you turn it on. The modem beeps three times. After the three beeps, press the button again three times, timed exactly in "rhythm" with the beeps. If your timing is correct, the modem speaks the digitally-recorded voices of the three developers saying their names ("Peter, Alan, Neal"). Contributed by Neal Johnson and Alex Rosenberg. 🍎

Tips and Tidbits

WHY JANUARY 1, 1904?

The original Macintosh development team (circa 1983) determined that January 1, 1904, would be The Day That Time Began. That date was chosen for several reasons:

- A longword seemed like an adequate amount of memory to allocate to date-keeping; its 32 bits can produce an unsigned number high enough to represent just over 130 years worth of seconds.
- The team wanted to include the birthdays of most Macintosh users, so a date somewhere around the turn of the century looked like a great target.
- Projecting from the beginning of this century forward for 130 years brought the date to 2030, which meant that clocks in Macs would work for 46 years before Time would run out (and reset to 1/1/04). Nobody wanted to speculate on the life of the Mac (or of the current operating system) beyond that point.
- For calculation purposes, it was arithmetically convenient to have time start on a leap year (which 1900 wasn't, being a century year not divisible by 4).

The philosophical implications of these facts are dizzying. The authors are therefore taking a short nap. Source: Hypertalk 2.2 – The Book (2nd Edition) by Dan Winkler, Scot Kamins, and Jeanne Devoto.

New Places to Find the Information Alley

You can now find the Information Alley on these online services and BBSs:

- Compuserve

  Path is: Apple Support Forum → Information Alley library

Tips and Tidbits

You can paste any picture in the System 7 Puzzle to create a custom puzzle. Try the graphic that's supplied with the Clipboard. To cheat and see what the puzzle's supposed to look like after it's solved, look at the Clipboard.

DOS Compatibility Cards and QuickDraw Printers

From the Technical Information Library

If you use a QuickDraw printer, such as a LaserWriter Select 300 or a Color StyleWriter Pro with the Macintosh Quadra DOS Compatible computer, you may find that you cannot get either to print. The Print Monitor may capture the job, but it doesn't print.

To print to a color printer from the DOS Compatible card, special print drivers are required. As of yet, no manufacturer that we know of has provided any compatible drivers. Hewlett-Packard has tested this possibility but they could not get it to work.

There are no Window print drivers for the LaserWriter Select 300 either. Since neither of these printers are PostScript, and there are no MS-DOS drivers to run it, it's very unlikely that either is going to work. There is no known work around.

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